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The obvious interest of the foregoing letter is in its testimony that the writers were keenly alert as to transformism at this early date (1796), and that they had even marked out an important line of inquiry—comparison of old world species with new world species, and a study of the variation of those forms which had been introduced and allowed to run wild for a considerable period, possibly a hundred years. In other words, they are seeking ‘a more exact knowledge on the nature of the species and even of the species in general.’ And they clearly assume the importance of evolution, when they aim to measure the amount of change (degeneration) which transplantation has caused in the economy of mammals. Especially conspicuous is the importance which is apparently attributed to the Buffonian factor: ‘we also desire some species of quadrupeds from your *climates*.’ “It is incredible what variety these animals offer to the attentive eye.” There is even a crude notion of parallelism in the remark that ‘many analogous forms are taken for species.’ Noteworthy also is their interest in the paleontological evidence, for the bones from salt licks are expected to yield important evidence as to ‘the theory of the earth.’ And we may conclude that Lamarck had evidently his *Hydrogéologie* (1802) as well as transformism in mind in his search for evidences as to distinctness of species widely separated geographically when he theorizes as to the ancient outlines of continents, and maintains that no species of the ancient continent exist in the new.

The present paper, moreover, narrows the probability that Lamarck borrowed his transformism from Doctor Darwin. For Lamarck is not known to have had evolutionary tendencies before about 1799, and it has accordingly been stated that the *Zoonomia* (1794) was the slowly working cause of his conversion. By the present evidence, moreover, he was enterprisingly investigating the nature and variability of species, as early as the spring of 1796, *i. e.*, less than two years after the publication of Darwin’s work, and possibly before it was circulated abroad. Indeed, even in England there is little reference to it be-

fore 1798, and Paley’s attack upon Darwinism did not appear till 1802. Of certain interest is the literary partnership of Lamarck and Geoffroy in philosophical matters at this early date. Geoffroy was then but twenty-four years of age, and this is, as far as I am aware, the earliest record of his interest in the origin of species. It antedates by several years his studies on the mummied fauna of Egypt; and we may naturally query whether he may not already have had in mind to test the possibilities of variation by comparison of the early and late ‘productions’ of the valley of the Nile before Napoleon had laid his plans for an actual invasion? BASHFORD DEAN.

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THE NATURE OF THE PELÉE TOWER.

THE recent publication of a note by Professor Lacroix (*Comptes Rendus*, March 20, 1904) on the production of quartziferous rocks in the course of the actual eruption of Mont Pelée, and the stated conclusion arrived at by the distinguished French geologist that rocks of this character (and by analogy, other igneous rocks of more clearly marked figure, such as microgranulite and even true granite) may be formed superficially and do not require in their construction deep-seated pressure—conditions which have long since been recognized, even if the processes of formation had not before been observed—afford, perhaps, a sufficient reason for me to state my belief that the giant obelisk of rock, which at the time of its greatest development, the close of May of last year, towered out of the crateral opening of the volcano to a height of nearly 1,000 feet (and, had there been no summit, breakages would probably have risen a full thousand feet higher), had *not* the structure that was assigned to it by Lacroix—namely, that it represented an exceedingly viscous acidic lava which solidified immediately on its extrusion and rose vertically under volcanic stress instead of flowing off in the manner of the normal lava-streams. This seemingly simple explanation of one of the most remarkable structural forms of the earth’s surface has apparently been accepted by most geologists, and my own earlier studies led me to the same conclusion. A later critical examina-

tion, however, based upon considerations drawn from the form of the tower, the distinctly varying conditions of two opposed faces, the absence of fluidal overflow at any point, and the sharp line of demarkation that separated the base of the structure from the enveloping cone or dome (in which a true flow was plainly apparent, exemplifying the Georgios-Santorin dome of 1866 and the Vesuvian 'monticule' of 1895), and a review of the difficulties that stand in the way of the Lacroix explanation, forces upon me very strongly the impression that the tower was merely the ancient core of the volcano that had been loosened from its moorings and lifted bodily outward by the force of the volcano's activity. The whole appearance of the tower was much more suggestive of an ancient rock metamorphosed by heat (or steam) action than of a newly formed and rapidly solidified lava, and as early as August, 1902 (*McClure's Magazine*), when its extraordinary relations were still unknown, I referred to it (and others, likewise) as giving the aspect of 'burned-out cinder masses.' This view of the structure of the Pelée tower has, indeed, suggested itself as a possibility to other geologists, and I believe was held tentatively by some before I had myself seriously considered it; but at this time it does not seem to me that there can be much doubt as to its broad accuracy.

The lifting of giant rock-masses or mountain-cores through the crateral axis of a volcano is not entirely unknown, for it is now many years since Abich described, in his monumental work on Transcaucasia, the upheaved mass occupying a portion of the crateral wall of the Palandokän volcano; and a somewhat similar structure had been noted still earlier by Scrope in the Puy Chopine of the Auvergne. Neither of these structures was in any way comparable in magnitude with the Pelée tower, but their manner of uplift was not unlikely largely identical. The fact that most volcanoes 'plug' themselves after varying periods of activity, and that some of these reopen directly in the line of earlier eruptions, would in itself seem to suggest that from time to time extravasated plugs (neck-cores or towers) should appear at the surface, and

I take it for granted that some, at least, of what have heretofore been considered as volcanic erosion-fragments are in reality merely structures of this kind. It can hardly be possible that upthrusts of this nature should not exist. Sir Richard Strachey has, indeed, called attention (in *Nature*) to numerous 'towers' or fingers occurring over the trap-flows of the Dekkan plateau, and he likens these (observed and sketched by him the better part of seventy years ago) to the Pelée excrescence. In how far the structures may or may not be identical only a new study of the Indian field can positively determine; but I believe that the Indian figures will be found to represent the extremely acute 'thumbs' and pinnacles which surmount the trap plateau of different parts of Greenland (Omenak Promontory, Disko Island), whose origin through erosion can not be questioned. Somewhat more doubtful may be the character of the (true) Devil's Thumb which marks the entrance to Melville Bay, and whose picture looms up in my mind very similar to that of Pelée's tower.

In this brief note it is impossible to enter into a discussion of the difficulties that oppose themselves to the generally accepted view of the structure of the Pelée tower; some of these will be more particularly referred to in a general paper which is about being sent to press. The view here expressed may lead to a better understanding of the relations of the ejected fragmental rock, the greater part of which, it seems to me, is from the old stock of the volcano, with the chemical and physical composition of which it so closely agrees.

ANGELO HEILPRIN.

PHILADELPHIA,

May 5, 1904.

CURRENT NOTES ON METEOROLOGY.

A NEW SUNSHINE RECORDER.

In *Symons's Meteorological Magazine* for March, the new Dawson-Lander sunshine recorder is thus described. The instrument consists of a fixed drum, on which some silver chloride photographic printing paper is fastened, under a film of transparent celluloid. An outer cover is rotated by clock-work once